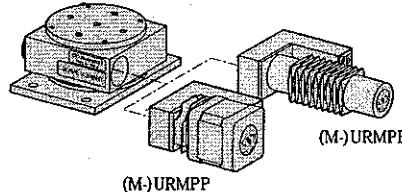


4.0 Drives

4.1 Stepper Motor Drive

Stepper-motor-driven stages are offered in two variants:

- One mini-step drive version: (M-)URMPP.
- One full-step version: (M-)URMPE.



Full-Step Drive

Is used for stepper motors, when 1 pulse emitted by electronic corresponds to theoretical physical motion of 1 full step of the motor.

Our full-step stages have one more specification: minimum increment of kinematic chain equals encoder resolution.

Mini-Step Drive

Is used for stepper motors, when 1 pulse emitted by electronic corresponds to theoretical physical motion of a fraction of a full step of the motor.

For these stages a mini-step equals 1/10 of a full step.

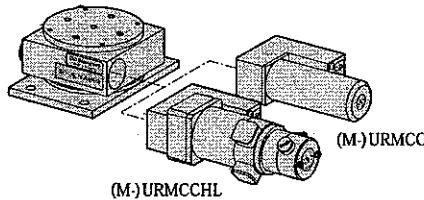
Stepper Motor Performance Specifications

	Resolution (°)	Speed (°/sec)	Motor
(M-)URM80PP	0.001	20	UE41PP
(M-)URM100PP			
(M-)URM80PE	0.001	2	UE31PP
(M-)URM100PE			

4.2 DC Motor Drive

Two DC-motor-driven configurations are available:

- One version equipped with a tachometer: (M-)URMCCHL.
- One low-power version: (M-)URMCC.



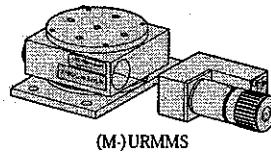
DC Motor Performance Specifications

	Resolution (°)	Speed (°/sec)	Motor
(M-)URM80CCHL	0.001	20	UE404CC
(M-)URM100CCHL			
(M-)URM80CC	0.001	2.5	UE31CC
(M-)URM100CC			

4.3 Manual Drive

One manual drive version is available, equipped with a rotary encoder: (M-)URMMS.

Our CV1000 Display Counter permits to read the position.



Manual Performance Specifications

	Resolution (°)	Nb (°/rev.)
(M-)URMMS	0.001	2

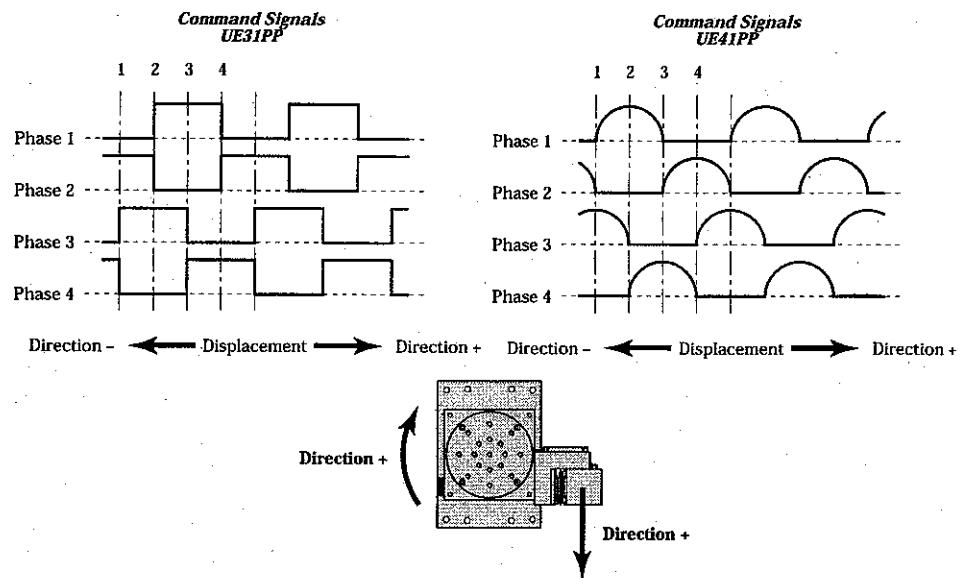


5.0 Motorization

5.1 Newport Stepper Motor Characteristics

Motor	Angle by Step (°)	Current (A)	Resistance (Ω)	Inductance (mH)	Newport Utilization
UE31PP	3.6	0.56	7.6	8.4	Full-Step
UE41PP	1.8	1.2	3	4.3	Full-Step or Mini-Step

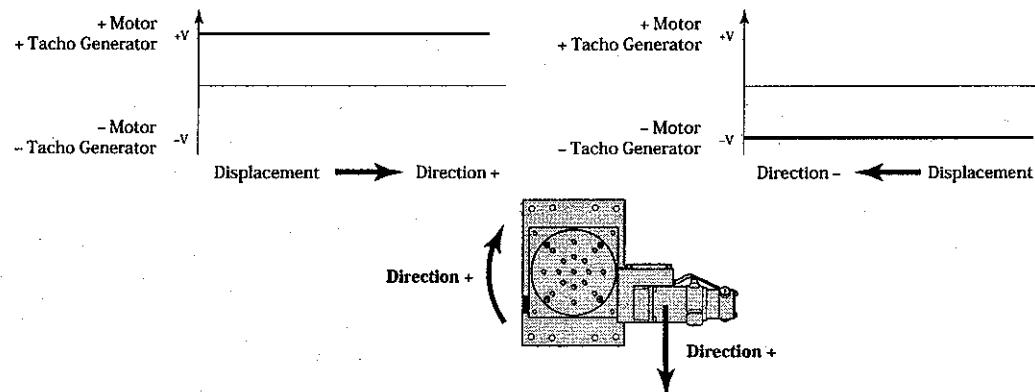
5.2 Command Signals for Newport Stepper Motors



5.3 Newport DC Motor Characteristics

Motor	Mechanical Power (W)	Nominal Voltage (V)	Armature Resistance (Ω)	Tachometer (V/Krpm)
UE31CC	2.53	24	57	-
UE404CC	40	75	18.6	3 ($\pm 10\%$)

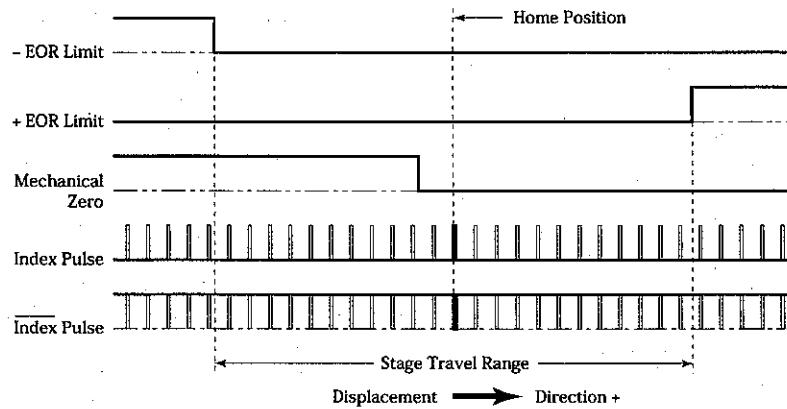
5.4 Command Signals for Newport DC Motors



In the above drawings, + Motor signal is referred to – Motor signal, + Tacho Generator signal is referred to – Tacho Generator signal.

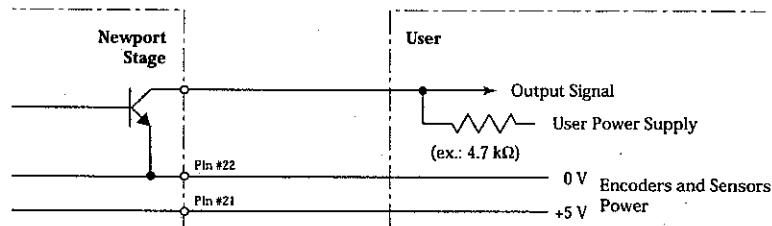
- 1 When the stage moves in + Direction, the + Motor voltage is higher than – Motor voltage, and + Tacho Generator voltage is higher than – Tacho Generator voltage.
- 2 When the stage moves in – Direction, the + Motor voltage is lower than – Motor voltage, and + Tacho Generator voltage is lower than – Tacho Generator voltage.

5.5 Sensors Position



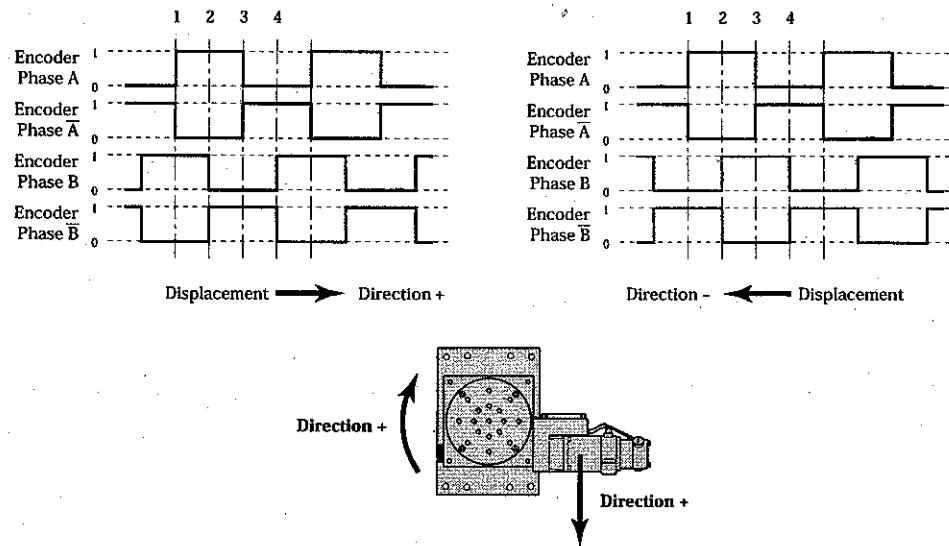
End-of-Run and Mechanical Zero are "Open Collector" type output signals. Their use needs a pull-up resistance connected to the power supply (generally the power supply of the board where signals are sent).



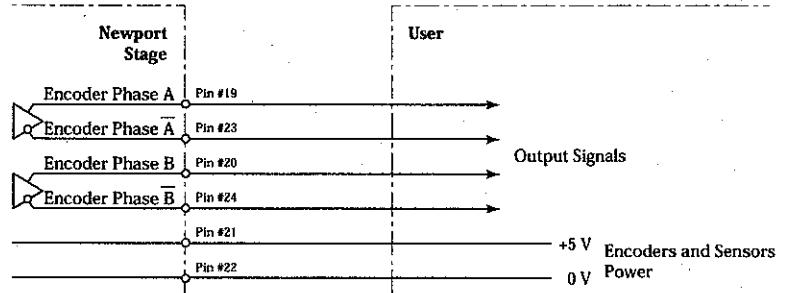


Index Pulse and Index Pulse are "differential pair" type output signals. Using these signals permits a high immunity to noise. Emission circuits generally used by Newport are 26LS31 or MC3487. Reception circuits to use are 26LS32 or MC3486.

5.6 Feedback Signals Position

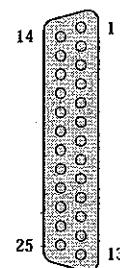


The incremental sensor operates following the photoelectric measurement principle, with a disk including slides. When the sensor shaft turns, the sensor generates square signals in quadrature, sent to pins #19, #20, #23 and #24 of the 25-pin Sub-D connector.



Encoders are "differential pair" type output signals. Using these signals permits a high immunity to noise. Emission circuits generally used by Newport are 26LS31 or MC3487. Reception circuits to use are 26LS32 or MC3486.

5.7 Pinouts



The 25-pin Sub-D connection for each (M-)URM stage is given in the following table:

	UE31PP: (M-)URMPE	UE31CC: (M-)URMCC	UE404CC: (M-)URMCCHL	Manual: (M-)URMMS
1	Phase 1	N.C.	+ Tacho Generator	N.C.
2	Phase 1	N.C.	+ Tacho Generator	N.C.
3	Phase 2	N.C.	- Tacho Generator	N.C.
4	Phase 2	N.C.	- Tacho Generator	N.C.
5	Phase 3	+ Motor	+ Motor	N.C.
6	Phase 3	+ Motor	+ Motor	N.C.
7	Phase 4	- Motor	- Motor	N.C.
8	Phase 4	- Motor	- Motor	N.C.
9	Common phase 3-4	N.C.	N.C.	N.C.
10	N.C.	N.C.	N.C.	N.C.
11	Common phase 1-2	N.C.	N.C.	N.C.
12	N.C.	N.C.	N.C.	N.C.
13	Mechanical Zero	Mechanical Zero	Mechanical Zero	Mechanical Zero
14	Shield Ground	Shield Ground	Shield Ground	Shield Ground
15	Encoder Index Pulse I	Encoder Index Pulse I	Encoder Index Pulse I	Encoder Index Pulse I
16	0 V logic	0 V logic	0 V logic	0 V logic
17	+ End-of-Run	+ End-of-Run	+ End-of-Run	+ End-of-Run
18	- End-of-Run	- End-of-Run	- End-of-Run	- End-of-Run
19	Encoder Phase A	Encoder Phase A	Encoder Phase A	Encoder Phase A
20	Encoder Phase B	Encoder Phase B	Encoder Phase B	Encoder Phase B
21	Encoder Power: +5 V	Encoder Power: +5 V	Encoder Power: +5 V	Encoder Power: +5 V
22	0 V Encoder	0 V Encoder	0 V Encoder	0 V Encoder
23	Encoder Phase /A	Encoder Phase /A	Encoder Phase /A	Encoder Phase /A
24	Encoder Phase /B	Encoder Phase /B	Encoder Phase /B	Encoder Phase /B
25	Encoder Index Pulse /I	Encoder Index Pulse /I	Encoder Index Pulse /I	Encoder Index Pulse /I

